

# 7

## Living and Non-living Things

### Let us Learn about

- Characteristics of living things
- Difference between plants and animals



### Previous Connect

The environment around us includes both living and non-living things. Living things breathe, grow, excrete, reproduce and feel. Non-living things cannot do any of these things.

You see a variety of things around you like trees, dogs, chairs and birds. Some of these things are living, while some are non-living. Living and non-living things have many dissimilarities.

Let's study about the characteristics that are common in living things and are absent in non-living things.

### CHARACTERISTICS OF LIVING THINGS

All living things have some basic similarities.

#### Living things eat food

When we feel hungry, we eat food. All living beings need food. They cannot live without it. Food gives energy to living beings. The process of obtaining food and using it for growth and other processes is called **nutrition**.

- Plants make their own food by the process of **photosynthesis**. They are called **autotrophs** or **producers**.

- Animals which get their food from plants or other animals are called **consumers** or **heterotrophs**.

Have you ever seen a table or chair eating food? Certainly not, because these are non-living things. They do not need food.

### Living things respire

All living organisms respire. Although, the way they respire is different. **Respiration** is a complex process which includes taking in air, using it in the breakdown of food and getting energy from it. This process releases carbon dioxide that is exhaled from lungs. It is a chemical process.



## Activity I

### To show that exhaled air contains carbon dioxide gas

Take lime water in a clear test tube. Breathe out air through your mouth with the help of a straw into the lime water. Lime water will turn milky. It shows the presence of carbon dioxide in the exhaled air.

**Breathing** is a part of respiration and only involves the movement of air in and out of the body. It is a physical process.

Plants also respire. They respire through very small pores on their leaves called **stomata**. Plants also take in oxygen and release carbon dioxide during respiration.

### Living things grow

The process by which the size of an organism increases is called **growth**. It is an irreversible and a permanent process.

Growth takes place in living things due to the formation of new cells within the body.



A seed grows into seedling and then into a plant



A baby grows into a child and then into an adult

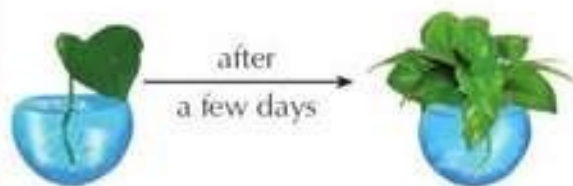
Non-living things do not grow by themselves. They may appear to grow due to addition of material they are made of. But the size of individual particles by which they are made of, does not increase.





## Activity 2

To show that living things grow



Cut out a stem of a money plant. Place it in a glass vessel containing water, place it on a windowsill. You will observe that roots of the plant starts growing from it after a few days.

Take a stone and put it similarly in a glass of water. Do you see any growth? What do you conclude?

### Living things excrete

Excretion is the process of getting rid of waste materials from the body. It is an essential process of the body, because if wastes continue to accumulate in the body of an organism, it can result in death.

- Animals excrete wastes in the form of sweat, urine, carbon dioxide and faeces.
- Plants excrete water vapour and oxygen through the stomata. They release carbon dioxide at night through the stomata. They also give out secretions in the form of sap, gum and latex.

### Living things reproduce

All living organisms reproduce. Reproduction is the process of producing more of one's own kind. This process maintains the continuity of life on the earth.



A cow with its calf

- Animals reproduce by laying eggs (hens, snakes, etc.) or by giving birth to young ones (mammals).



Hen with its eggs



Woman with her child



## Activity 3

Make a list of any four animals found in your locality that reproduce by laying eggs and that give birth to their young ones.

Animals that lay eggs	Animals that give birth to young ones
1.	
2.	
3.	
4.	



- Plants reproduce through seeds (pea, gram, mango), through their parts like leaves (begonia), stem (rose), roots (carrot) and through spores (ferns).



Begonia leaves



Rose plant



Carrot



## Activity 4

Make a list of any four plants that reproduce through seeds and those reproduce through a part of a plant other than seed.

Plants reproduce through seeds	Plants reproduce through leaf, leaf buds, roots, etc.
1.	
2.	
3.	
4.	

### Living things move

Living things have the ability to move. The movement of animals from one place to another is termed as **locomotion**.

- All animals can move from one place to another.
- Although plants are fixed to the soil, yet they show some kind of movements. For example, when you touch the leaves of the *Mimosa* (touch-me-not) plant, they droop.
- In all these examples, we can see that living things need no external force to move from one place to another. On the other hand, non-living things do not move on their own. They require an external force to move.

### Living things respond to Stimuli

Living things react and respond to various changes in their surroundings. A reaction to the **stimulus** by an organism is called **response to stimuli**.

All living things respond to stimuli. For example:

- Your hand retracts when it touches a hot object.
- You close your eyes immediately when bright light falls suddenly on them.



Response to stimuli in touch-me-not plant

**stimulus:** thing or event that leads to a specific functional reaction in an organ or tissue

- Plants also respond to various stimuli. The stem of most plants bend towards the sunlight. Such a response of plants to light is called **phototropism**. Similarly, roots of the plants grow towards the earth. This growth of roots towards the earth is called **geotropism**.



## Activity 5

### To study the response of a plant to sunlight

Keep a small potted plant near a window through which light can enter. After a few days, you will observe that the tip of the plant has bent towards the direction from where the light is coming.



Plant bends towards light

### Living things have a life span

All living things are born, they grow up and then die. The time period between their birth and death is called the **lifespan**.

- Different organisms have different lifespans. For example, average lifespan of a human being is 60–80 years. Some living organisms have very short lifespan like bacteria while some live for thousands of years. Average lifespans of some organisms are listed in the following table:

Average lifespans of some organisms

Organism	Average Lifespan
Bacteria	20 minutes
Housefly	1–4 months
Mouse	2–3 years
Squirrel	8–9 years
Dog	12–14 years
Lobster	20 years
Lion	20–25 years
Horse	25–30 years
Ostrich	45–50 years
Human being	60–80 years
Elephant	70–90 years
Tortoise	120–150 years



## Living things are made up of cells

**Cell** is the smallest structural and functional unit of life. All living things are made up of cells.

- Amoeba and yeast are the examples of organisms which have only one cell. Such organisms are called **unicellular organisms**.
- Dogs, cats and most of the other organisms are made up of millions of cells. They are called **multicellular organisms**.

The following table will help you to recollect the differences between living and non-living things.

### Differences between living and non-living things

Characteristics	Living things	Non-living things
Respiration	They respire	They do not respire
Reproduction	They reproduce	They do not reproduce
Nutrition	They require food	They do not require food
Growth	They grow	They do not show any growth
Movement	They move from one place to another	They cannot move on their own
Response to stimuli	They show response to stimuli	They do not respond to stimuli
Excretion	They excrete waste	They do not excrete waste
Cellular	They are made up of cells	Cells are absent in them

## DIFFERENCE BETWEEN PLANTS AND ANIMALS

Plants and animals are both living things. Both of them need food to remain alive and to grow. Still they are different from each other in the following ways:

Characteristics	Plants	Animals
Nutrition	Plants are autotrophs i.e., they can prepare their own food.	Animals are heterotrophs i.e., they cannot prepare their own food. They depend on plants or other animals for food.
Locomotion	Plants do not move from one place to another and remain fixed to the soil.	Animals can move from one place to another.
Growth	Plants grow throughout their lives.	Animals grow upto a certain age.
Reproduction	Plants reproduce through seeds, spores or other parts of the plant.	Animals reproduce by laying eggs or by giving birth to young ones.
Excretion	Plants expel out wastes in the form of water and gases, and secretions, like gum.	Animals give out wastes in the form of urine, sweat, carbon dioxide and faeces.
Respiration	Exchange of gases takes place through stomata or body surface.	Exchange of gases takes place through gills (fish), lungs (mammals), spiracles (insects), body surface (earthworm).

### FACT FILE

A newborn baby has more than 2,000 million cells.



## Time to Answer

Answer the following questions.

- (a) Define lifespan.
- (b) What do you mean by stimulus?
- (c) Define excretion.
- (d) Name the wastes excreted by humans.



## Key Terms

<b>Photosynthesis:</b>	the process by which plants make their own food
<b>Respiration:</b>	the process of taking in air, using it for the breakdown of the food to get energy from it and release of carbon dioxide from lungs
<b>Phototropism:</b>	response of plants to light
<b>Geotropism:</b>	growth of roots of plants towards the earth
<b>Stimulus:</b>	anything that induces a reaction in an organism
<b>Response:</b>	reaction of an organism towards a stimulus
<b>Cell:</b>	the smallest structural and functional unit of life



## Now I Know

- Living and non-living things differ in several ways.
- Living things share common features like they respire, get rid of wastes, require food, reproduce, respond to stimuli and grow up.
- Living things are made up of cells.
- Plants and animals differ from each other in the way they reproduce, grow, excrete and respire.
- Some animals reproduce by laying eggs while some others give birth to their young ones.
- Plants reproduce through seeds, leaves, stems or other parts.





## Let us Practise.....

### 1. Multiple Choice Questions (MCQs)

Tick (✓) the correct option.

(a) A gas released in the process of respiration that turns lime water milky is

(i) oxygen

☐

(ii) carbon dioxide

☐

(iii) nitrogen

☐

(iv) none of these

☐

(b) Which of these can respond to stimuli?

(i) Plant

☐

(ii) Book

☐

(iii) Table

☐

(iv) Car

☐

(c) An excretory product (waste) given out by some plants is

(i) gum

☐

(ii) sweat

☐

(iii) urine

☐

(iv) all of these

☐

(d) Rose plant reproduces through its

(i) seeds

☐

(ii) roots

☐

(iii) stems

☐

(iv) leaves

☐

(e) A plant that shows response to touch is

(i) *Mimosa*

☐

(ii) Cactus

☐

(iii) Rose

☐

(iv) Marigold

☐

(g) Plants and animals differ in their mode of

(i) nutrition

☐

(ii) reproduction

☐

(iii) excretion

☐

(iv) all of these

☐

### 2. Fill in the blanks.

(a) Plants respire through tiny openings called \_\_\_\_\_.

(b) Animals are called consumers or \_\_\_\_\_.

(c) Growth in plants is \_\_\_\_\_ but is limited in animals.

(d) The structural unit of living things is \_\_\_\_\_.

(e) The growth of roots of plants towards the earth is called \_\_\_\_\_.





- (f) \_\_\_\_\_ is the process of removal of wastes from the body.
- (g) Green plants are called \_\_\_\_\_ or producers.
- (h) The response of plants to light is called \_\_\_\_\_.

**3. Understand the relation and fill the blanks.**

- (a) Respiration: \_\_\_\_\_ :: Breathing: Physical process
- (b) Amoeba: Unicellular :: Cat: \_\_\_\_\_
- (c) Hens: \_\_\_\_\_ :: Mammals: Young ones
- (d) \_\_\_\_\_ Producers :: Animals: Consumers
- (e) Pea: Seeds :: Rose: \_\_\_\_\_

**4. Very short answer type questions.**

- (a) Name the living things that are called autotrophs.
- (b) Name the process by which plants make their own food.
- (c) Name a part from which plants excrete water vapour and oxygen?
- (d) Give characteristic of living things.
- (e) Define the term 'stimulus'.
- (f) Define a cell.

**5. Short answer type questions.**

- (a) Differentiate between breathing and respiration.
- (b) Differentiate between autotrophs and heterotrophs.
- (c) What is the importance of excretion?
- (d) What is locomotion?
- (e) Why food is needed by living things?

**6. Long answer type questions.**

- (a) Explain the different types of movements of a plant with examples.
- (b) Explain the term 'response to stimuli' with a suitable example.
- (c) Explain the difference between the mode of reproduction in plants and animals.
- (d) Write the differences between living and non-living things.



**HOTS (Higher Order Thinking Skills)**

- 1. The clouds in the sky grow in size. Can they be categorised as living things? Why?
- 2. Plant respire all the time but they photosynthesise only during the daytime. Why?



## PROJECT WORK

- Latex is obtained from the bark of trees as an excretory product. It is used to make rubber. Make a list of some more excretory products obtained from plants and also write their uses. Make an informative chart on it.
- Collect more information about some unicellular organisms like bacteria, yeast and amoeba. Find out how they obtain their nutrition and how they excrete and reproduce. Make an informative chart from this information. You can take help from the internet for this project.
- Collect pictures of some aquatic plants and paste them in your scrapbook. Also, find out how they get their nutrition. You can take help of the internet to do this project.



### Value-Based Question

A pigeon made nest in Varun's house. When the pigeon laid eggs in its nest, Varun stole the eggs and showed them to his friends. When his mother saw him doing this, she got angry and told him to put the eggs back in the nest. She told him that pigeon eggs are also a living thing and young pigeons will hatch out from them after some days. What values does Varun's mother exhibit?



### Life Skill

Like us, plants and animals are also living things. Just as you care for yourself, you should also care for other life forms. You should never tease animals. You should also motivate people not to hunt animals for their skin or meat.



### Web Reference

[sciencelearn.org.nz/science-stories/earthworms/characteristics-of-living-things](http://sciencelearn.org.nz/science-stories/earthworms/characteristics-of-living-things)



# GURU GOBIND SINGH PUBLIC SCHOOL

## **BIOLOGY ASSIGNMENT**

CLASS: 6

### **Living and non-living things**

**Study materials:** Living and non-living things,  
Characteristics of living things

## **ASSIGNMENT**

(READ PDF BEFORE DOING THE ASSIGNMENT)

1. List the common characteristics of the living things.
2. Give an example of a non-living thing, which show any two characteristics of living thing.
3. Why do animals move around?
4. How are autotrophs different from heterotrophs?
5. Give an example of movement in plants?

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